

PREDECISIONAL DRAFT

Protocol Topic: Routing

1. Introduction

This protocol addresses practices to identify and select transportation routes for shipments of DOE radioactive materials. This protocol does not address selection of transportation modes, but deals with selection of appropriate routes for a determined transportation mode using existing transportation physical infrastructure. ***The Transportation Planning protocol addresses mode selection. This protocol does not change current agreements between DOE and states and tribes regarding the routing of DOE shipments.*** Routing of shipments by barge and air are not addressed. Also, this protocol does not cover operational aspects such as vehicle or track inspections. This protocol is to be used in conjunction with related protocol areas, in particular, the protocol on Projected Shipment Planning Information. This protocol covers the majority of DOE radioactive material shipments. Routing of unique shipments (e.g., shipments of high activity low-level waste) may be handled on a case-by-case basis.

2. Highway Routing

Definition: Highway routing refers to the selection of appropriate highway routes for DOE shipments of radioactive materials.

1. Non-Classified Shipments

1. Spent Fuel, High-Level Waste and Tritium-Bearing Reactor Components

1. Highway route selection is made in accordance with 49 CFR 397.101(b) for these highway route controlled quantity shipments.
2. DOE/transportation contractor performs an analysis of proposed routes using transportation models (such as HIGHWAY or INTERLINE).
3. DOE coordinates and consults with states and tribes on the transportation plans. Additional input resulting from stakeholder review of projected shipment planning information is considered. Routes are documented in specific shipment transportation plans.
4. For safeguards and security purposes:
 - (1) For spent nuclear fuel shipments involving NRC-licensed material or licensees (that is, shipments of spent nuclear fuel under the Nuclear Waste Policy Act, as Amended, Foreign Research Reactor spent nuclear fuel shipments, and university and research reactor spent nuclear fuel shipments), routes are submitted by the shipper or transportation contractor for approval by the NRC in accordance with 10 CFR 73.37.
 - (2) The following shipments are not subject to NRC safeguards

and security review:

- (1) Shipments of tritium-bearing reactor components
 - (2) high-level waste shipments
 - (3) shipments of domestic DOE-owned spent nuclear fuel (Conducted in compliance with DOE Orders, whose requirements were approved by DOT under 49 CFR 173.22(c)(2) as essentially equivalent to NRC's).
5. For spent fuel and high-level waste shipments made under the Nuclear Waste Policy Act, as Amended, the responsible program will also follow the route selection requirements in the operational protocols identified in "Acquisition of Waste Acceptance and Transportation Services for the Office of Civilian Radioactive Waste Management" (Draft RFP #DE-RP01-98RW00320 or subsequent revisions), including DOE responsibility for stakeholder interactions and final route approval.

2. Transuranic Waste Shipments

1. **Shipments to the Waste Isolation Pilot Plant (WIPP):**

DOE negotiates routes with states and tribes on behalf of the carrier. Specific routes to WIPP will be identified from each of the waste generator sites. In developing these routes, DOE:

- (1) suggests routes, based on highway route controlled quantity routing criteria, (49 CFR 397.101) which carriers would follow between given origins and destinations, to states and tribes
- (2) provides for state, tribe, and local review and comment on proposed routes
- (3) recognizes states and tribes may designate routes in accordance with DOT regulations (49 CFR 397.103)
- (4) uses cooperative agreement groups to help facilitate interactions with states
- (5) allows for route modifications following a defined process involving states, tribes, and local stakeholder input
- (6) minimizes the number of routes used for WIPP shipments
- (7) specifies routes to be used as an enforceable provision in contracts with carriers

2. **Other TRU Shipments**

TBD

3. Low-Level and Mixed Low-Level Waste
Carriers will select routes in accordance with DOT regulations. Per 49 CFR 397.101(a), except in circumstances when there is only one practicable highway route available, considering operating necessity and safety, the carrier shall:

- (1) Ensure that the motor vehicle is operated on routes that minimize radiological risk;
- (2) Consider available information on accident rates, transit time, population density and activities, and the time of day and the day of week during which transportation will occur to determine the level of radiological risk; and
- (3) Tell the driver which route to take and that the motor vehicle contains Class 7 (radioactive) materials.

4. Isotopes
For highway shipments, carriers will comply with DOT requirements for routing of radioactive materials (49 CFR 397.101). Air shipments will be in accordance with applicable regulations (Department of Transportation regulations for domestic, International Civil Air Organization regulations for international shipments).

2. Classified National Security Shipments
Per Federal Motor Carrier Safety Regulations, DOE uses approved hazardous material cargo routes, as designated by states or tribes, as a guide for classified national security shipments. The DOE optimizes the use of four-lane highways and two-lane roads with wide shoulders for safety and security concerns. 49 CFR 173.7(b) exempts classified shipments from DOT regulations, for the purpose of national security.

3. Rail Routing

Definition: Rail routing refers to the selection of appropriate rail routes for DOE shipments of radioactive materials.

1. **Non-Classified Shipments**

1. Spent Fuel, High-Level Waste and Tritium-Bearing Reactor Components
 1. DOE or designated DOE shipper specifies carriers and interchange points between carriers. DOE will coordinate routing options with rail carriers and stakeholders. The following factors should be considered to the extent practicable:
 - (1) distance traveled

- (2) number of interchanges between railroads
 - (3) use of higher-grade track, for example, "key routes" as defined in Association of American Railroads Circular OT-55-B
 - (4) operational input from carriers
 2. DOE/transportation contractor performs an analysis of proposed routes using transportation models (such as HIGHWAY or INTERLINE).
 3. DOE coordinates and consults with states and tribes on the transportation plans. Additional stakeholder input resulting from stakeholder review of projected shipment planning information is considered. Routes are documented in specific shipment transportation plans.
 4. For safeguards and security purposes:
 - (1) Spent nuclear fuel shipments involving NRC-licensed material or licensees (that is, shipments of spent nuclear fuel under the Nuclear Waste Policy Act as Amended, Foreign Research Reactor spent nuclear fuel shipments, and university and research reactor spent nuclear fuel shipments) routes are submitted by the shipper or transportation contractor for review by the NRC in accordance with 10 CFR 73.37.
 - (2) The following shipments are not subject to NRC safeguards and security review:
 - (1) Shipments of tritium-bearing reactor components
 - (2) high-level waste shipments
 - (3) shipments of domestic DOE-owned spent nuclear fuel (conducted in compliance with DOE Orders, whose requirements were approved by DOT under 49 CFR 173.22(c)(2) as essentially equivalent to NRC's).
 5. For spent fuel and high-level waste shipments made under the Nuclear Waste Policy Act, as Amended, the responsible program will also follow the route selection requirements in the operational protocols identified in "Acquisition of Waste Acceptance and Transportation Services for the Office of Civilian Radioactive Waste Management" (Draft RFP #DE-RP01-98RW00320 or subsequent revisions), including DOE responsibility for stakeholder relations and final route approval.
2. Transuranic Waste Shipments
 1. **Shipments to the Waste Isolation Pilot Plant (WIPP):**

No rail shipments to WIPP are currently planned. The protocol for rail shipments to WIPP is TBD.

2. **Other TRU Shipments**
TBD

3. **Low-Level and Mixed Low-Level Waste**
DOE or designated DOE shipper specifies carriers and interchange points between carriers. Each carrier selects the specific route to be used while the shipment is in the carrier's custody and care.

4. **Isotopes**
No isotopes are shipped by rail.

2. **Classified National Security Shipments**
National security rail shipments are routed as described above for spent fuel (A.1.a.(1)-(4)) and low-level waste, as applicable based on material type. Routing information is made available to state and tribal organizations as described in the Shipment Planning Information Protocol.

KEY ISSUES

1. Stakeholders want DOE to establish a national set of routes that carriers will be directed to use.

Specific Comments:

DOE allows its nuclear waste generator facilities to contract with commercial carriers for the transport of the waste to storage/disposal sites. These contract carriers often choose the routes for use in these shipments. Western Governors' Association Resolution 099-014 recommends that DOE work through its regional cooperative-agreement groups to propose a set of primary and secondary shipping routes to affected States and Tribes for their review and comment. These routes should then be required through mandatory contract provisions with any private contractors. (Calif. Energy Board)

DOE/WIPP did not allow the contract carrier to choose the highway route to be used. All routes were specified in the transportation contract and corresponding carrier management plan. DOE/HQ is strongly encouraged to emulate this successful WIPP approach to routing for other of its radioactive materials transportation programs. Recent changes to NRC routing regulations now require documentation of all routing consultations with potentially affected entities. (NM EM&NR Dept.)

A national routing plan is needed for LLW/MLLW shipments. (WGA)

DOE should develop a sound methodology for evaluating optional mixes of routes, and transportation modes to identify the best shipping route, and force its carriers, through the terms of its contracting agreements, to exclusively use those routes. This allows the states to focus their emergency response training and equipment along a few select routes, instead of being forced to dilute its coverage. (WIEB)

DOE Response:

The draft Projected Shipment Planning Information and Routing Protocols reflect a cooperative stakeholder approach to route selection. The challenges of maintaining responsibility for routing in accordance with the existing regulatory framework, conducting business in the most effective manner (which may not include transportation contracts but instead common carrier arrangements for transportation) while at the same time addressing stakeholder routing concerns is reflected in these two draft protocols.

2. Stakeholders want DOE to identify routes to be used 3 years in advance of shipments.

Specific Comments:

Routing protocol should state that routes must be identified at least three years prior to beginning

shipments. States need adequate time to develop and implement a transport safety program, including emergency response preparation, public information programs and other necessary preparations before any shipments of spent fuel or high-level waste begin. (Calif. Energy Board)

Although this protocol specifies that States and Tribes are to be informed of proposed routes, it lacks guidance to DOE programs on when they should provide such information. With shipments to a permanent SNF/HLW repository not expected to commence until the year 2010 at the earliest, there is no reason why DOE cannot at least provide a full three years; lead time of notification to States and Tribes of proposed routes. (NM EM&NR Dept.)

DOE Response:

For those material types addressed in the protocols, the Projected Shipment Planning Information Protocol envisions routing discussions far enough in advance to allow for adequate training and shipment preparations. This information provides a basis for continuing dialogue between the shippers and affected stakeholders.

3. Stakeholders want mode selection considered as an integral part of route selection.

Specific Comments:

Recommend changing the description of this protocol to "Actions taken to identify and select transportation modes and routes." (NM EM&NR Dept.)

Recommend changing the title of this protocol to "Mode/Route Selection" because the two are inextricably linked. During the recent TEC/WG Transportation Planning exercise, many stakeholders indicated a desire to be involved in the mode selection process for selected DOE shipments (e.g., low-level waste and mixed low-level waste). (NM EM&NR Dept.)

DOE Response:

The Protocol does not address mode selection so this change would not be appropriate. Selection of mode will be discussed in the transportation planning protocol yet to be developed.